

First Fully-Automatic Shell Line To Be Installed at Joliet Arsenal

Designed by AMF Experts For Ordnance

NEW YORK—As part of a large stand-by armament program, the U. S. Army Ordnance Department has contracted with American Machine & Foundry Co. to build a fully automated shell-filling line for the Joliet Arsenal. Designed by AMF's Mechanics Research department in Chicago to handle either 75 or 90 mm shells, the system represents a "first" in the ordnance field.

The complex principle of weighing the propellant and filling the shells to accuracies heretofore unknown in rapid automatic processes has been proved in equipment built and installed at the arsenal. Completion of the balance of the installation is scheduled for the near future.

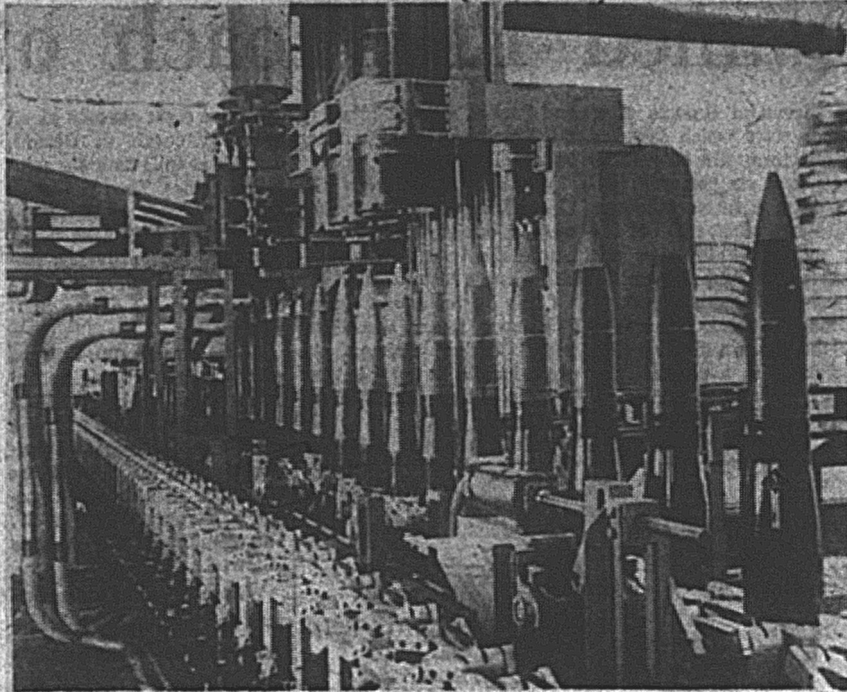
The availability of this equipment means that the U.S.A. has the stand-by capacity to produce a substantial quantity of either caliber in a single day should an emergency arise. In addition, it means that minimum personnel are needed to conduct this operation during either stand-by or production periods.

The fully automated line is divided into 12 stations, all of which are monitored by a single operator sitting at a control console. In addition to elaborate instrumentation, the operator watches live television monitors that tie in with cameras focused on critical operations in the process.

At the beginning of the line, shell cases and primers are decartoned, assembled to each other, and inspected. After transfer to the main conveyor, the sub-assemblies are positioned in groups of three under weigh hoppers from which extremely accurately weighed batches of smokeless powder pellets drop into the open ends of the cases (some 3,750 to 3,800 pellets are required for each 90 mm shell).

The shells then continue their intermittent travel along the conveyor to succeeding stations where the projectiles are stenciled and crimped into cases, and the completed shells gauged in simulated gun tube chambers. Off-weight or outsize shells are automatically sidetracked from the line.

The last few stations on the line handle the packaging of the finished shells. Each shell



AUTOMATED SHELL LINE—Designed and built by the Mechanics Research department of American Machine & Foundry Company for the Joliet Arsenal, key stations along this automated shell assembly line are observed on five television monitors by a single operator seated at remote console.

is fed into a cylindrical container which has a shock-absorbing filler at each end to protect the primer. Finally, each cylinder is sealed, stenciled and crated, ready for shipment.